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### Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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### Freeze-dried Arterial Homografts

This is a report of the first clinical use of arterial homografts preserved by freeze-drying. This method has certain advantages over those previously used. While processing is somewhat more involved, storage does not require the supervision of specialized personnel; it is not dependent on controlled conditions of temperature, storage media, and sterility; it is independent of power failure and most extrinsic influences. With this technic the grafts are stored and handled just as a bottle of dry blood plasma and may be shipped to any point by commercial carrier. In addition, these grafts have a shelf life in excess of 2 years.

The freeze-drying method of processing arterial homografts has been described in detail by Hyatt, Pate, and Strong and associates and may be summarized as follows:

The arterial homografts are obtained at sterile autopsies of patients who die in the hospital. Permission is secured from the next of kin and the vessels are removed within 24 hours of death, the body having been refrigerated in the interim as described by Deterling and associates. No patients who have positive Kahn tests, infections, or malignant tumors are used as tissue donors. The arterial segments are removed under elaborate aseptic conditions. Sections of each graft are taken for bacteriologic study and microscopic examination.

The vessel segments are placed in glass tubes and frozen by immersion in a mixture of absolute alcohol and dry ice at  $-78^{\circ}\text{C}$ . After 5 minutes of freezing in this solution the grafts are either placed directly in a freeze-drying machine or into storage at dry-ice temperature to await freeze-drying. For drying, an extensively modified commercial freeze-drying machine is used, and the grafts are placed in a vacuum of 50 to 100 microns of mercury. The temperature is maintained at less than  $-35^{\circ}\text{C}$ . for several hours. The



arterial segments are thus dried by sublimation, the entire process taking approximately 72 hours. During the last 24 hours of the cycle the temperature is raised to 30° C. When drying is completed the residual moisture in the graft has been reduced to less than 1% of the normal unbound water content. The grafts are sealed in bottles under an ionizable vacuum and stored at room temperature.

At the time of implantation the vessels are reconstituted by placing them in a large volume of physiologic saline solution containing penicillin and streptomycin. After 30 minutes in this solution at body temperature, the vessels, although nonviable, have regained all the physical properties of a fresh artery.

It has been demonstrated in the experimental animal that freeze-dried arterial grafts may be used with excellent results after storage for periods in excess of 2 years. The incidence of complicating thrombosis and hemorrhage is lower, replacement of the freeze-dried graft with host tissue is more rapid, and there is less foreign-tissue response than that obtained with fresh arterial homografts.

A direct surgical attack in the form of excision of lesions of major blood vessels has been, to a large extent, a product of recent years. When extensive, such procedures depend upon the availability of a suitable graft to replace the excised segment of vessels.

In general, the vascular lesions for which excision and replacement offer real promise in treatment are: (1) aneurysms of major vessels including the aorta; (2) coarctation of the aorta; (3) segmental occlusive diseases of major vessels; (4) malignant invasion of major vessels; and (5) traumatic lesions of major vessels. Before embarking upon this clinical study of freeze-dried arterial homografts it was decided to use them without selection in all cases requiring replacement of a segment or segments of the vascular tree. To date the authors have treated cases in the first 3 categories listed. Although they have not treated any acute traumatic cases in this series, it is their prediction that these preserved, readily transported, and easily applied grafts may be found of great value in the field of military surgery.

So far as the authors have been able to ascertain, these are the first human cases in which freeze-dried arterial grafts have been used. Twelve vessel segments have been implanted in 7 patients. The cases have been followed for periods varying from 1 to 9 months. In all instances patency of the graft apparently has been maintained during this relatively short period of observation. This gratifying clinical experience has been that which was postulated from the study of freeze-dried arterial homografts in the research laboratory and the experimental animal. (Surg., Gynec. & Obst., Dec. 1953, CAPT R. B. Brown (MC) USN, C. A. Hufnagel, M. D., LTJG J. W. Pate (MC) USNR, and LT W. R. Strong (MC) USNR; U. S. Naval Hospital and Research Institute, NNMC, Bethesda, Md.)

### Management of Airway in Acute Head Injury

The past decade has witnessed an increased emphasis on the maintenance of a patent airway in the treatment of all types of trauma.

Respiratory obstruction with resultant asphyxia has two components: first, a reduced pulmonary ventilation capacity evidenced clinically as dyspnea; and second, hypoventilation. The latter produces hypercapnia (increased circulating CO<sub>2</sub> levels) and anoxemia (decreased O<sub>2</sub> levels), which result in acidemia and severe acidosis, both respiratory and metabolic. Early, this serves as a stimulus to increase respiratory effort until a critical point is reached. Subsequently this stimulus changes to inhibition, with eventual respiratory collapse. Anatomically, this results in permanent changes in the central nervous system, even after short periods of time. There may be local respiratory tract complications of congestion, atelectasis, and the sequelae, pneumonitis, "drowned lung," and lung abscess. Thus there is created a vicious cycle: respiratory obstruction; dyspnea producing increased intrathoracic pressure, which contributes to the increased intracranial pressure; hypercapnia and anoxemia, producing further cerebral edema and eventual permanent cerebral damage. This cycle must be interrupted by prompt and direct action to relieve the respiratory obstruction. The most effective way to achieve this is by endotracheal intubation. Four forms are generally available: (1) the single catheter method employing a No. 16 French catheter; (2) the "tracheobronchial toilet," using a small catheter through a wide bore tube; (3) bronchoscopy; and (4) tracheostomy. The authors' initial experiences with the first 3 forms were not consistently successful. All 10 patients succumbed to the combined effects of their head and concomitant injuries and complications thereof. Each, additionally, had evidence of respiratory tract obstruction. The authors, therefore, turned to tracheostomy with better results, albeit the percentage of mortality was still great. However, it was their observation that there was a definite improvement in all patients on whom this type of therapy was instituted. They succeeded in salvaging 6 patients whom they believed would have certainly died if tracheostomy with relief of respiratory obstruction had not been accomplished.

Tracheostomy is being recognized as good therapy in the prevention of pulmonary complications in postoperative and severely debilitated patients. In this respect, particular care of the neurosurgical patient is needed, because additional factors are present as a result of the cerebral injury itself; i. e., decreased gag reflex, obstruction by relaxed pharyngeal musculature, aspiration of food, liquid, and saliva into the lungs, and the tendency for secretions to accumulate in the tracheobronchial tree. The occurrence of concomitant chest injuries among patients suffering from head trauma further increases the mortality rate. Tracheostomy has been shown to have



definite therapeutic effects in this group: a mechanical cleansing of the airway by easy removal of excessive fluids or blood from the tracheobronchial tree, as well as relief of laryngeal obstruction from edema, bleeding, or faulty function of the vocal cords; and a physiological decrease in the amount of dead space in the respiratory tract, and a diminished resistance to breathing. Furthermore, tracheostomy has the advantages of being a well-tolerated, simple, and single procedure. It is direct and definitive. Less experienced ward help can take over aspiration and management of the oxygen catheter; and alcoholic, intractable, and severely injured patients are most easily managed in this manner.

If there is any doubt as to the patency of the airway, it is best to do a tracheostomy. Certainly, a patient with manifest respiratory embarrassment demands tracheostomy, as well as any patient who has been comatose more than 24 hours. In this latter group great amounts of "hidden" bronchial and alveolar secretions may be raised by proper aspiration, even if no clinical signs of respiratory distress are evident. These patients require constant vigilance, scrupulous nursing care, frequent turning, and careful aspiration, with short periods of suction, in addition to the routine administration of oxygen, antibiotics, parenteral fluids, and alimentation, as indicated for each patient.

The pathophysiology of respiratory obstruction in acute head injury is discussed. The methods of maintaining a patent airway are enumerated and evaluated. Case reports and data are presented to illustrate the clinical difficulties of this problem. Tracheostomy is the most effective measure in the management of the airway in acute head injury. (Arch. Surg., Nov. 1953, A. W. Ulin, M.D. and H. L. Rosomoff, M.D., Department of Surgery, Hahnemann Medical College and Hospital, Philadelphia, Pa.) (See Medical News Letter, Vol. 22, No. 11, page 10.)

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#### Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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### Surgical Treatment of Saccular Aneurysms

Improvement in technical aids available to the neurosurgeon has lowered the operative mortality for surgical treatment of intracranial vascular lesions. However, the operative mortality for intracranial aneurysms reported in the literature has continued to be high, especially for those treated by the intracranial approach. For this reason many surgeons have been content to ligate the carotid artery in the neck rather than assume an operative mortality and morbidity as great or greater than if the aneurysm were not treated at all. This article reports a large series of surgically treated aneurysms of the circle of Willis. The majority of these lesions have been treated by direct intracranial attack. Only berry or saccular aneurysms are reported. The surgical results of treatment of arteriovenous anomalies and carotid-cavernous sinus fistulae will be reported in a separate article.

All of the patients had signs and symptoms manifested by an acute or subacute cerebrovascular episode, either with subarachnoid or intracerebral hemorrhage or paralysis of a cranial nerve. The clinical manifestations of aneurysm are well documented elsewhere and will not be repeated here. Neither surgery nor arteriography was performed in the acute phase of the illness, i. e. within the first 48 hours following the apoplectic attack. When the vital signs became stabilized and the state of consciousness improved, carotid arteriography was performed by percutaneous puncture (85%) or direct exposure (15%) of the carotid artery in the neck. If an aneurysm was shown on the films the decision whether to operate was made. No patients with negative arteriograms were operated upon. The following factors were considered in deciding for or against surgical attack upon the aneurysm: (1) location of the aneurysm, (2) age of the patient, (3) size of the neck of the aneurysm, if present, (4) the general and neurological condition of the patient, (5) ability of the patient to tolerate carotid compression for 30 minutes (Matas test), and (6) the likelihood of producing an intolerable deficit if it were necessary at operation to sacrifice the artery feeding the aneurysm. No rigid criteria were adopted for any one situation, but the operative procedure for each patient was made flexible enough to produce maximal results with minimal risk.

Aside from the flawless execution of the surgical procedure the most important consideration is the surgeon's judgment of the proper time to operate. Because the clinical course of hemorrhage from intracranial aneurysm is notoriously unpredictable, the surgeon may have difficulty in selecting the optimal time for surgery. The time for surgery is that time when the vital and neurological signs have leveled off. If the surgeon operates before this time he will be subjecting the patient to an increased risk. If he waits too long for this optimal state to be reached, the patient may die before surgery can be done. The surgeon, therefore, must develop an acumen for timing the operation and furthermore have the necessary courage to undertake bold procedures when dealing with this deadly disease. As his ability to carry out the proper procedure at the proper time improves,



the surgeon will be rewarded with a permissible operative mortality and morbidity. Until the surgeon can offer the patient a better chance for improvement with surgery than without, the patient should not be subjected to surgery.

The danger to life and neurological function is a calculated risk which must be assumed when the decision to operate is made. Furthermore, the outcome of surgery often depends on factors that cannot be forecast nor avoided.

Fifty-six consecutive patients with surgically treated intracranial aneurysms are reported. The over-all surgical mortality was 3.6% and 7% of the patients had a postoperative hemiplegia. Of 14 patients treated by ligation of the carotid artery in the neck, none died and 1 patient (7%) was rendered hemiplegic. Of the 42 patients requiring an intracranial operation, 2 died (4.7%) and 3 became hemiplegic (7%).

Factors that make for success or failure in the surgery of aneurysms are listed and discussed. A rational method of treatment of aneurysms in different locations based on successful treatment is outlined. (J. Neurosurg., Nov. 1953, 301-327 E. Lawrence Ave., Springfield, Ill., Capt. H. F. Steelman, MC, USA, Lt. Col. G. J. Hayes, MC, USA, and H. V. Rizoli, M.D.) (See Medical News Letter, Vol. 22, No. 5, p. 2)

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### Management of Serious Scalp Injuries

Scalp injuries, especially those complicated by the loss of tissue, invariably are serious surgical emergencies. Two factors of paramount importance in their management are: (1) control of infection and (2) restoration of an acceptable cosmetic appearance. Numerous articles have appeared in the literature during the past decade on the management of complete or subtotal scalp avulsions, but it was believed that a review of scalp injuries of lesser extent might be of value.

Patients with scalp injuries constitute surgical emergencies and must be carefully observed to evaluate properly cerebral and cranial damage. The accepted rules for the management of soft-tissue injuries apply also to the scalp. Contrary to a somewhat prevalent attitude that scalp injuries will always heal without infection, serious infection can and does occur. Although posttraumatic infection may occur but rarely, the consequences of intracranial abscess and its complications must be borne in mind. Therefore, meticulous application of good surgical technic must be practiced at all times.

The vascularity of the scalp is unique. The copious blood supply promotes rapid healing, and infection is relatively rare in most scalp wounds.

This rich blood supply also makes possible the shifting of large pedicles and rotation flaps with almost invariable success.

The principles to be observed in closing of scalp wounds are: (1) wound closure with a minimum of tension; (2) covering of cranial defects with full-thickness scalp without the suture line overlying the defect, and (3) immediate covering of denuded bone and/or pericranium. The management of cranial and cerebral defects is, of course, best handled by the neurosurgeon. However, the principles of scalp closure remain the same.

The basic aims in closing scalp defects in accordance with the foregoing principles are fourfold: (1) scalp advancement, (2) relaxing incisions, (3) rotation flaps, and (4) application of free skin grafts.

When there has been little or no tissue loss, the majority of scalp lacerations can be closed by debriding the margins of the wound and suturing them together, without undermining the scalp. Debridement is conservative, and the removal of ragged and contused tissue will insure less scar tissue formation. When tissue loss is minimal, the wound is extended in both directions with S-curved incisions to distribute tension over a greater area, thereby reducing tension in the immediate wound area. Scalp tissue, unlike skin, does not advance readily because of its firmness and relative inelasticity. Extensive undermining is necessary to advance scalp tissue in any appreciable degree. The ratio may be 6 to 9 cm. of undermining in the subaponeurotic space for each 1 cm. of scalp tissue to be advanced. Multiple parallel incisions from the underside of the scalp can be used as an adjunct in stretching the scalp. These incisions are carried through the aponeurosis and subcutaneous layers, but not through the skin itself. The tripartite technic of Cushing is a type of scalp shifting and advancement. The wound edges are debrided and excised so as to produce a triangular defect. The angles are then extended therefrom in a long curve. The one disadvantage of this type of closure is that the suture line may overlie the area of fracture; thus, in some types of cranial wounds other procedures of scalp shifting are preferable in order to place the suture line away from the area of cranial injury.

Relaxing incisions are made parallel to the line of closure of the initial wound. These may be single or multiple, but must be longer than the initial wound to be efficient in reducing tension and to expedite the repositioning of scalp tissue. Relaxing incisions produce, in effect, bipedicled flaps. They are especially useful in forehead defects, where a fine line closure is desired. An extremely satisfactory cosmetic result can be achieved through the use of local tissue of full skin thickness. The secondary defect is then split-skin grafted within the hair-bearing area. The skin grafts can subsequently be excised multiply, if so desired.



The sliding rotation flap, as advocated by Sir Harold Gillies, is exceedingly useful in scalp wounds, especially when these are associated with an underlying cranial defect. Tension on resuture is distributed over a wide area and removed from "the point of danger." Such a rotation flap is cut by incising in a wide curve, so as to produce a hemisphere flap. The end of the incision can also be "dog-tailed."

The methods already described of shifting scalp are useful in covering bare bone. If bone is not covered, it will die. Bare bone cannot be covered successfully with split-skin grafts. However, when the outer table of cranial bone is thinned and perforated in multiple areas by the use of a chisel, a split-skin graft can be applied with a reasonable assurance of taking. A procedure used in early American pioneer days was that of drilling multiple holes with an awl through the outer plate into the diploic space. Granulation tissue would then grow from the holes and spread across the surface to produce a closed wound. The "know-how" of drill holes in scalping injuries of the American frontier days is presented in an excellent article by Strayer.

The pericranium must be covered promptly or it will gradually disappear. Split-skin grafts can be applied to the pericranium with every reasonable assurance of a take. There are instances in which a split graft is most appropriate in repairing scalp defects due to trauma, or those following the excision of malignant lesions. The local area can then be observed for a possible recurrence of the neoplasm. Split grafts on the head remain smooth, become pliable, and thicken, and the edges level off at the suture line so that often a definitive result which is quite acceptable to the patient is obtained.

Failures with the use of pedicle flaps of the scalp are due primarily to disturbances in vascularity. Such disturbances may be the result of (1) pedicle flaps with the base at the midline or in the basal area in which a main vascular channel may have been interrupted, (2) infection, with resulting thrombosis of the vessels, and (3) inept or excessively tight pressure dressings. (Postgraduate Medicine, Dec. 1953, Essex Bldg., Minneapolis 3, Minn., M. D. Beers and F. W. Pirruccello)

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### Total Gastrectomy

Total gastrectomy is now an accepted surgical procedure. The technical difficulties encountered in the performance of the operation have been worked out and basic principles established. These technical developments, together with the advent of chemo-antibiotic therapy and advances in anesthesia and in the pre- and post-operative care of patients, have resulted in

progressive improvement in the mortality of this radical surgical procedure. Studies carried out upon individuals who have survived the early operations have established the fact that patients who have had the entire stomach removed can maintain their weight and strength if the proper type of diet and supplemental medication is administered.

In general, total gastrectomy is indicated when the disease of the stomach, endangering the life of a patient, is confined to the stomach and so much of the organ is involved that nothing short of its total removal will eliminate the disease. Linitis plastica is an excellent example of such a condition. The tissue spaces, muscular distribution, lymphatic pathways, and vascular channels of the stomach all assist in the permeation of carcinoma through the organ. The leather-bottle type of stomach resulting from carcinomatous infiltration of all or the greater part of stomach may be treated by total gastrectomy because of the frequency with which the disease is confined to the stomach itself. Three of the patients in this series had lesions of this character. If subtotal gastrectomy is attempted when carcinoma of this type involves the greater part of the stomach, several biopsies should be taken from the severed end of the stomach which is to be anastomosed to the jejunum in order to assist in eliminating the hazard of leaving carcinoma beyond the grossly evident borders of the growth.

While total gastrectomy offers the best chance of a cure when extensive carcinoma is confined to the stomach without evident lymph node metastasis, the field of its application has been widened even further in recent years. It is the only operation that offers an opportunity to save patients when carcinoma of the pylorus has extended to the cardiac lymph nodes.

It is believed that thorough preparation of the patient for extensive gastric surgery is essential and will materially affect the mortality rate of the operative procedure. Several days' hospitalization is necessary for this purpose. During this time the general physical state of these individuals can be studied and efforts directed toward improving correctable defects. The diet should contain high protein and carbohydrate values. If partial obstruction of the pylorus is present, these substances should be incorporated in a liquid type of diet which the patients are able to assimilate. The diet can be supplemented with daily intravenous injections of glucose to improve the glycogen reserve in the liver. Secondary anemia and hypoproteinemia can be corrected by repeated small blood transfusions. When pyloric obstruction exists, daily gastric aspirations tend to decrease gastric edema and improve the circulation in the wall of the stomach. Because many gastric carcinomas are accompanied by a degree of secondary infection, repeated gastric lavages with tenth normal hydrochloric acid tend to reduce the number of the pathogenic bacteria present.

There has been progressive improvement in the operative mortality of total gastric resection in recent years. Although at least 50% of the patients submitted to the procedure died prior to 1926, more recent reports



indicate uniformly better results in the hands of many men. This has been accomplished by solving many of the technical difficulties encountered in performing the operation, by the advent of chemo-antibiotic therapy, and by improvements in the pre- and post-operative care of patients.

Studies of an increasing number of patients who have survived for prolonged periods after the operation have established the fact that individuals who have had their entire stomach removed are not condemned to invalidism. The physiologic changes in the gastrointestinal tract, as well as general systemic changes, resulting from total gastrectomy can be controlled in most instances by administering the proper type of diet together with supplemental medication. As a result, these patients can be maintained in good health and can return to many of their former activities. Because of the improvement in the operative mortality of total gastrectomy and the ability to maintain the weight and strength of individuals who have survived the procedure, the operation should no longer be considered suitable for removing extensive malignancies of the stomach for palliative purposes alone. It is the only procedure that offers a chance to increase the percentage of 5-year cures when carcinoma of the pylorus has extended to the cardiac lymph nodes. Because of the reasons mentioned and the fact that it is often impossible to tell by palpation whether or not lymph nodes have been involved by carcinoma of the stomach, it has been suggested that subtotal gastric resection should be supplanted by total gastrectomy in all instances of gastric malignancy. Whether or not such a radical viewpoint is justified will have to be determined by the results of comparative studies after total gastrectomy has been employed in more instances. (Am. J. Surg., Dec. 1953, 49 W. 45th St., New York 36, N. Y., M. T. Hoerner, M. D., Ph. D.)

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#### Portal Cirrhosis

Despite the voluminous literature on Laennec's cirrhosis, there are still many unanswered questions about this disease. This study was undertaken in the hope of solving some of these problems. The incidence of cirrhosis of the liver, especially of the type usually associated with chronic alcoholism, is relatively high at the Los Angeles County Hospital. Although the percentage of cases necropsied with this diagnosis varies from time to time, during the past several years it has averaged about 5%. The so-called sub-acute phase appears to be extraordinarily frequent in this area, with probably the highest incidence of any comparable area in the United States. A moderate number of patients who acquire this type of cirrhosis are Mexicans or persons of Mexican descent. These individuals drink wine chiefly, while some drink wine plus beer or whisky, or both. They prefer sweet wine and commonly drink about 2 quarts daily if they drink only wine. The

relatively large Mexican population is one factor that makes subacute cirrhosis so common in Los Angeles County. The major factor lies elsewhere, however, because the number of Mexicans in this study amounted to only 20% while 74% were non-Mexican white Americans.

It was hoped that a large series of this kind would help clarify the relationship of alcoholic consumption and dietary deficiency factors to portal cirrhosis. Very early in the study, however, it was realized that too little data had been recorded in the patients' charts as to the amount and kind of alcoholic beverages used and that deplorably little data were available on the amount and quality of the diet. The clinician in the group (A. Y. O.) therefore undertook a separate study of the effects of dietary deficiency. The study by Olsen included 100 living patients in the Los Angeles County Hospital with the diagnosis of portal cirrhosis, who were interviewed regarding dietary factors and drinking habits. Two different groups of 100 noncirrhotic patients were likewise interviewed to serve as controls. One of these groups was in the Los Angeles County Hospital; the other was from Dr. Olsen's private practice.

It is commonly believed that persons with chronic alcoholism have less coronary disease and that the arteries generally exhibit less arteriosclerosis than is seen in the general population. It was anticipated that a large series of cases might provide the answer, or at least approach the truth more closely than had been possible heretofore.

Related closely to the question of arteriosclerosis is the incidence of hypertension in chronic alcoholic patients with cirrhosis. If there is less coronary sclerosis and less general arteriosclerosis, there should be less hypertension.

Another objective was to determine the relation of hepatic changes to jaundice in patients with cirrhosis. Many patients in the subacute stage of cirrhosis enter the hospital with jaundice or they develop jaundice soon after reaching the hospital. A good percentage of these patients die. Does the liver in these particular patients reveal changes that explain the presence of jaundice? Besides these fairly definite objectives, a natural curiosity existed in the authors' minds as to minor factors that might come to light when a large series of cirrhotic patients was studied.

This report is a clinical and pathologic study of 782 cases in the Los Angeles County Hospital diagnosed after necropsy as portal (Laennec's) cirrhosis.

Ages ranged from 10 to 90 years. Almost half (49%) occurred between 40 and 60 years of age. Only 17% died before 40 years of age while 34% died after reaching 60 years of age.

Males outnumbered females 2.2 to 1. Caucasians (not including Mexicans) numbered 74%, Mexicans 20%, Negroes 4%, and others 2%. Data on diet was fragmentary. Protein was deficient in 45% and B complex in 60%. The authors' study revealed that 79% of the patients could be classed as



heavy drinkers. Olsen, by personal interview of cirrhotic patients, had found that 92% were heavy drinkers.

The major clinical signs in the patients studied were ascites, edema, jaundice, hepatomegaly, splenomegaly, telangiectasis, hematemesis, dermatitis, and disorientation. The importance of thinking of cirrhosis and alcoholism is emphasized in patients with mild gastrointestinal complaints, otherwise early cases of cirrhosis may go untreated at a time when reversal of liver changes is possible.

For convenience, three phases of cirrhosis were recognized: the early fatty subacute with large liver, the intermediate subchronic phase with moderate to marked fibrosis and moderate increase in size, and the chronic atrophic hobnail phase.

Fibrosis of the periportal areas ranged from minimal to moderate in the subacute group; in the subchronic, from moderate to advanced; and in the atrophic group, from advanced to far advanced, the majority falling in the latter group.

There was no definite pattern in the distribution of new bile ducts in the periportal fibrous tissue among the three phases. This was true also of round cell infiltration of the fibrous portal areas.

Fatty infiltration was most conspicuous in the subacute group, only 12% being free of fat. In the subchronic group, 50% contained fat while 23.57% contained fat only to a 1 plus degree. Of the atrophic group 60% contained visible fat and 30% had 1 plus or less.

The authors believe that in the human subject, as has been shown in experimental cirrhosis due to dietary deficiency, fatty infiltration and enlargement of the liver precede the development of true cirrhosis.

Hepatic necrosis was found in all three phases of cirrhosis but was most common in the subacute. Most of the patients who showed necrosis of the liver had jaundice of some degree.

In 60% of the patients with subacute cirrhosis, the spleen was enlarged. In the subchronic and atrophic phases of the disease, 70 to 75% showed splenomegaly. In 50% of the latter the weights ranged from 200 to 400 gm.

Fatal hemorrhage from esophageal varices occurred in 10% of the subacute group and in 25% of the subchronic patients. The incidence was slightly lower (21.6%) in the atrophic group.

Up to 55 years of age moderate to severe coronary arteriosclerosis was only about 50% as common in the cirrhotic group as in a group of non-cirrhotic controls. The differences after 65 to 70 years of age were much less marked in the two groups.

The difference in incidence of hypertension in the 782 cirrhotic patients when compared with a very large group of noncirrhotic controls was more definitely in favor of the cirrhotic group than was true for coronary sclerosis. Statistical analysis of the incidence of hypertension in 524 male and 249 female cirrhotic patients versus 190 male and 305 female noncirrhotic

controls showed, at age 50, both systolic and diastolic pressures significantly higher in noncirrhotic than in cirrhotic patients, including both sexes.

Causes of death in cirrhosis fell mainly into four categories: (1) acute and chronic infections which accounted for 33%; (2) hemorrhage from esophageal varices, 19%; (3) hepatic insufficiency, 17%; and (4) cardiac failure, 14%.

This study again emphasizes the seriousness of the problem of alcoholism in this country. (Am. J. Path., Nov.-Dec. 1953, E. M. Hall, M.D., A. Y. Olsen, M.D., and F. E. Davis, M.D.; School of Medicine of the University of Southern California, Los Angeles, Calif.)

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### Syringomyelia

At the turn of the century it was well recognized that cavitation in the spinal cord occurred in association with a variety of causative agents. Schlesinger, in his monograph, cited cavities occurring as a result of traumatic hematomyelia; softenings of inflammatory and noninflammatory origin, and cavities resulting from malformations, tumors, gliosis, and vascular changes associated with gliosis. In later years, other neurologic conditions have been shown to be associated with the clinical features of syringomyelia and the pathologic picture of cavitation. Among these disorders are the Arnold-Chiari malformation, platybasia, the Klippel-Feil syndrome, and, more recently, herniation of cervical intervertebral discs.

Little has been added to the clinical picture or to the understanding and treatment of syringomyelia other than to separate the described conditions from what is called "true" syringomyelia. In this article, 8 case reports with necropsy findings are presented to demonstrate some new considerations of this disorder.

At the onset of syringomyelia, diagnosis may be difficult. An extramedullary lesion is suggested when the onset is associated with severe pain. With the passage of time, evidence of intramedullary disease becomes more apparent. If the motor signs at the onset are limited to a single extremity, a focal lesion, such as cervical rib, is suggested. Indeed, there are some patients in whom these 2 disorders appear together. In the early stages, the diagnosis of multiple sclerosis may be considered. This is especially true because a long syrinx may suggest disseminated lesions and because some patients with syringomyelia may complain early of cranial paresthesias, blurred vision, and diplopia. The latter symptoms soon fade away, frequently never to recur, but the evidence of a remission may continue to suggest a diagnosis of multiple sclerosis. The course of syringomyelia is long, usually 10 to 15 years, but cases have been reported lasting up to 50 years. A protracted course may occur even in cases of syringobulbia. The



symptoms frequently progress for a few years and then remain static for the rest of the life of the patient, or there is slow, and intermittent or continuous deterioration. The ultimate findings of decrease or absence of pain and thermal sensation with intact touch sensation, the presence of local paralyses with fasciculations and atrophies, and the frequent spastic weakness of the lower limbs associated with trophic and skeletal alterations form the typical picture of syringomyelia. Other types of sensory dissociation may occur, most commonly early in the disease. Temperature sensation may be more affected than pain; heat sensation more than cold, or the reverse may be true. In these instances it is suspected that there is a different sensitivity of the fibers or that some form of functional lamination exists. In addition, some of the present cases indicate that vibratory sense may be altered, with preservation of position sense.

Review of the methods of treatment discloses some interesting facts. It is found that roentgen therapy is considered of value in about 60% of cases. This occurs in large series regardless of the age or sex of the patient or the duration and extent of the disease. Improvement is often obtained without regard to the method of x-ray treatment. Of further interest is the fact that surgical treatment is effective in approximately the same percentage of cases and also is independent of any clinical factors. The consistency of the figures suggests that psychogenic factors may play a role. There have been no controlled studies of syringomyelia, using sham radiation with filters to eliminate the x-rays. Sham radiation might have as much subjective value as genuine radiation. Most of the value attributed to x-ray treatment has related to subjective complaints. Improvement of skin circulation by erythema-producing doses is, of course, transient and of no conceivable value for the underlying disease. It is unfortunate that any improvement after x-ray therapy is attributed to such treatment but continued complaints of the patients are attributed to the course of the disease. It is, furthermore, difficult to discover a rationale for x-ray therapy. Gliosis, cavitation, and malformations of mature blood vessels are the substrate of syringomyelia. There is no evidence that any of these are benefited by x-ray therapy. On the contrary, the possibility of radiation myelitis is a definite one, and gliosis may be speeded. It is, therefore, possible that x-rays are harmful, but that the deleterious effects are masked by the progression of the disease. Occasionally patients may complain of being made worse.

Surgical incision of the cavity probably is also of little value, and a similar lack of controlled observations is apparent in most reports. The exception is the rare case in which there is blockage of the cerebrospinal fluid circulation. It is justifiable to assume that at least temporary improvement results from release of the block, but the basic disease process is unaltered.

Cavitation in the spinal cord, usually (although not always) associated with gliosis or fibrosis, is the pathologic mark of syringomyelia. If infarcts,

old inflammations, et cetera, are found with syrinx formation, the cavity should be diagnosed as part of the recognized basic disease. There remains, then, an unexplained group designated as "true" syringomyelia. Hydromyelia is used conventionally to designate a simple dilatation of the central canal, usually silent clinically. Actually this sharp separation is an oversimplification, although it is frequently valid. Hydromyelia may be an unexpected finding in routine examinations of the spinal cord, but so, too, may syringomyelia. Hydromyelia not only may accompany syringomyelia but may in some instances be an intimate part of the syrinx. On the other hand, a normal undilated central canal often is found at the same level as a large syrinx. Therefore, it cannot be argued that further dilatation of a hydro-myelic cavity is the usual origin of syringomyelia.

From the data presented it is suggested that an intramedullary vascular anomaly of the spinal cord is the cause of "true" syringomyelia. This conception is based on the following considerations: (1) In instances in which other anomalies of the body occur, spinal vascular anomalies often may be found. (2) There is a high correlation between intramedullary vascular malformations and vascular neoplasms, and syringomyelia. (3) The cervical and lumbar regions are best vascularized and are most often the site of syrinx formation. (4) Gray matter is more vascular than white matter and is the predominant site of syringomyelia. The posterior horn is often affected, as is the posterior median septum; and these locations often contain anomalous vessels. (5) Anomalous vessels frequently are found in and around "true" syringes. (6) Gliosis is often an accompaniment of or a reaction to abnormal vascularization. (7) The large amount of connective tissue which occurs in some syringes is best explained as originating from an increased number of blood vessels. Such connective tissue proliferation may occur in unirradiated patients. (8) Vascular hemorrhages and occlusions and physiologic alterations of blood flow, with slow reactive repair of damage, account for an initial rapid onset of symptoms, subsequent quiescence, and/or progressive disease. Reactive gliosis and fibrosis may be correlated with slow progression. (9) The effects of vascular anomalies frequently occur later in life, as does syringomyelia.

The following general theory of pathogenesis is offered. The patient is born with intramedullary vascular anomalies, which, in the course of time, become occluded or ineffective for maintenance of circulation. This leads to tissue destruction and cavitation, followed in some instances by a reparative gliosis or connective tissue proliferation. As a result, the anomalous vessels themselves may be infarcted, ultimately leaving only a cavity; but usually a few large abnormal vessels may be seen. Occasionally true vascular new growths may occur in these abnormal vessels. With loss of the majority of vessels, the condition then remains quiescent, or slowly



progressive as gliosis or fresh occlusions occur. (Arch. Neurol. & Psychiat., Dec. 1953, M. G. Netsky, M. D., Montefiore Hospital for Chronic Diseases, New York, N. Y.)

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### Dysphagia Due to Localized Narrowing in the Lower Esophagus

For a number of years the authors have been interested in a group of patients with dysphagia who do not fall in any of the commonly discussed groups of dysphagia and who seem to represent a characteristic clinical and roentgenological entity. The patient's complaint is intermittent dysphagia. The roentgenological picture is characterized by a concentric smooth diaphragmlike narrowing in the lower esophagus, approximately 5 cm. above the diaphragm.

The authors have seen 5 cases which fulfill the clinical and roentgen criteria of the syndrome.

Unfortunately, the exact nature of the lesion in the patients under discussion is not known, but there appears little doubt that they do form a group separate from other cases of dysphagia with a characteristic roentgenological and clinical picture. In this the authors agree with Ingelfinger and Kramer. The authors' observations differ, however, from theirs in some significant points. Ingelfinger and Kramer state that, at least in the milder cases, the lesion is not preformed and occurs as a peristaltic wave approaches the lower esophagus, that the ring may become more pronounced following an obstructive episode, and that it may migrate down the esophagus toward the diaphragm. The authors' observations force them to believe that the ring is fixed in its location in the esophagus, that migration is apparent rather than real, that the ring is present at all times although visible only when the intestinal tube proximal and distal to it is distended more than the maximum diameter of the ring, and that this maximum diameter is definite for each individual case. In contrast to Ingelfinger and Kramer, the authors have observed that the ring does not narrow down on food, but becomes maximally dilated by it. In other words, in contrast to the active motor phenomenon postulated by Ingelfinger and Kramer, the authors believe that the ring is a rather passive structure.

For this reason the maximum diameter of the ring is of prime importance. It determines the maximum size of the bolus which can pass through the ring, and the severity of the patient's symptoms. Usually, this diameter can be readily determined by spot roentgenograms of the filled lower end of the esophagus taken during deep inspiration or the Valsalva test. It is more convincing, however, to test this diameter objectively by the use of barium-filled gelatin capsules. The largest available and useful capsule, the 000 capsule, has a diameter of about 1 cm. and will identify any narrowing up

to this diameter. In the rarer instances when dysphagia is produced by a wider ring, the passage of solid food may be slowed by the ring, as shown by Ingelfinger and Kramer, and as seen in 2 of the authors' cases. The evaluation of such cases is more difficult, because the size of the bolus necessary to produce clinical symptoms and roentgenological abnormalities is apt to produce some discomfort and delay even in a normal person. Transient contractions of the lower end of the esophagus, which do not show the characteristics of the ring, and wide rings, which do not demonstrably block the passage of food, should not be accused of causing clinical symptoms.

Education in eating habits relieves the dysphagia in most cases. An occasional case may require surgical treatment. (Am. J. Roentgenol., Dec. 1953, R. Schatzki, M.D., and J.E. Gary, M.D., Mount Auburn Hospital, Cambridge, Mass.)

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#### Terramycin Treatment of Meningitis

Twenty-one meningitis patients, whose ages ranged from 6 weeks to 42 years, were treated with intramuscular terramycin. In most instances the initial dose of the drug was given intravenously.

Seventeen of the patients, including 3 who received intramuscular terramycin exclusively, had no local reactions. Four patients had tenderness, swelling, or induration at the site of injection in both buttocks and thighs, all of which subsided within 3 to 4 days. The average number of intramuscular injections for 17 patients with no local reactions was 13.5. For 4 patients with local reactions the average was 25.7 and for all 21 patients the corresponding figure was 18.6. The average number of days' medication for all patients while in the hospital was 8.4. For each of 4 patients it was 5 days and for 1 it was 20 days. All 21 patients made good recoveries, including 1 with Hemophilus influenzae infection and 3 with pneumococcus. However, among the 17 with meningococcic meningitis, 2 had some degree of deafness. There were no other complications. In no instance was there any reason to suspect the possibility of subdural effusion. Nor was there anything to suggest cerebral injury at the time of discharge from the hospital. Some of the children were seen several months after recovery and their physical and mental conditions were good.

No patient had more than 1 intrathecal puncture; 2 patients had none. The etiologic diagnosis was established by laboratory methods in each case. The authors noted that usually 2 or 3 days after beginning terramycin treatment the white blood cell count had increased. This may prove to be a valuable prognostic sign.



The authors believe this to be the first report concerning therapy with terramycin by the intramuscular route.

Intramuscular terramycin affords a ready and dependable means for administration of this antibiotic when oral medication is not feasible. It also seems to serve as a satisfactory substitute for intravenous therapy when the latter appears indicated for meningitis, but hospital facilities are lacking. (Arch. Pediat., Oct. 1953, A. L. Hoyne, M.D. and D. L. Simon, M.D., Cook County Contagious Disease Hospital, Chicago, Ill.)

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### Diseases of Current Significance

The incidence rate in September for venereal diseases among Navy and Marine Corps personnel increased to 48.8 per 1,000 from 42.9 in August. Not only is this the highest thus far for the year but it is higher than any month since April 1951. For continental United States the rate remained fairly constant (17 per 1,000) while only a slight increase was reported for ships, from 67.0 to 69.6 per 1,000. However, for noncontinental activities there was a sharp upswing from 82.0 in August to 120.1 per 1,000 in September. This noncontinental venereal disease rate incidentally is 40% higher than for the same month in 1952.

In noncontinental areas the highest incidence rate was shown for shore-based activities in the Far East, 183.3 per 1,000 for September 1953. This was twice as high as in the previous month. As would be expected, the greater part of the venereal disease incidence is reported as gonococcal infections, 129.8 per 1,000, with chancroid accounting for 52.0 per 1,000. This sharp rise of venereal disease in the Far East may to some extent be attributed to the cessation of hostilities since the recent truce and the greater opportunities for exposure among troops receiving increased liberty.

In September the incidence rate for nongonococcal urethritis reached a new high (22.6 per 1,000). This is 5 per 1,000 greater than in August. As in the past, very little nongonococcal urethritis is reported from continental United States activities, the rate averaging between 2 and 3 per 1,000 ever since reporting of this condition was required a little over 1 year ago. This is also the first month that the incidence rate for nongonococcal urethritis exceeded 40 per 1,000 for noncontinental areas and for ships with rates for September of 41.6 and 45.2 per 1,000 respectively.

The increase for noncontinental shore-based activities is directly due to the sharp rise in the Pacific area (mainly in the Far East), where the rate reached a new high of 48.9 per 1,000. This overshadowed the decrease from 19.4 to 11.6 per 1,000 reported for Atlantic-based overseas activities.

The sharp rise for ships can likewise be pinpointed to some extent. The rate for nongonococcal urethritis for ships of the Pacific fleets in September was 71.3 per 1,000. This was an increase of 19 per 1,000 over the previous month. Only a slight increase was observed for ships of the Atlantic fleets, from 20.0 per 1,000 in August to 24.7 in September. For MSTs vessels the rate dropped from 23.9 to 19.0 per 1,000, the lowest this year with the exception of January when the rate for this condition was 16.7 per 1,000. This, however, is not too significant because experience shows sharp fluctuations for these vessels probably resulting from variations in the type of personnel carried on board.

The seasonal peak reached in August of 0.5 per 1,000 for poliomyelitis among Navy and Marine Corps personnel was maintained in September. The current rate is comparable to that of the same month last year. Of interest is the fact that 80% of the poliomyelitis reported among Navy and Marine Corps personnel in continental United States came from the Sixth and Eleventh Naval Districts. In the Sixth Naval District most of the cases were reported from activities around Key West, Fla., and in the Eleventh Naval District the majority of the cases were reported from the naval hospital and adjacent stations in San Diego, Calif.

The seasonal decline in malaria among Navy and Marine Corps personnel, which started with a moderate decrease in August, dropped sharply in September to 2.8 per 1,000, a reduction of about 40%. However, the rates for malaria this season have been consistently higher than during comparable periods last year.

In continental United States, the incidence rate for malaria went from the July peak of 10.5 to 7.2 per 1,000 in August and down to 3.9 in September. This is still more than twice as high as it was in September of 1952. Similar to the pattern shown during the entire season, the majority of the cases are concentrated among Marine Corps activities in the Fifth and Eleventh Naval Districts.

The incidence rate for shore-based noncontinental activities receded only moderately in September, to 5.6 from 6.3 per 1,000 in August. As in the past, most of the malaria was reported from the Far East. It is of interest that this year very little fluctuation from month to month has been shown in this area.

As a whole, the impact of malaria among Navy and Marine Corps personnel during the 1953 malaria season was more than twice as severe as it was during the 1952 malaria season. (Statistics of Navy Medicine, Dec. 1953, Bureau of Medicine and Surgery, Navy Department, Washington 25, D.C.)

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### Migraine

Migraine is a psychosomatic disorder with a definite hereditary tendency which afflicts about 10% of the population. Although it is often referred to as a symptom complex, it acts like a disease in that it can produce considerable deviation of health from normal. Migraine in its typical or classical form is easy to diagnose but in its atypical forms can be difficult and confusing. This article discusses the diagnosis and treatment of migraine and emphasizes a common atypical variety which is called the "migraine-tension headache."

To understand migraine the physician should know the migrainous temperament. Migrainous persons are usually intelligent, shy, sensitive, conscientious, ambitious, perfectionistic, and reliable, although prone to overdo in getting their job done.

Migraine occurs about twice as frequently in females as in males. It may begin as early as 6 years of age and continue beyond the age of 60 years. In women it is frequently associated with menstrual periods and usually, though not always, tends to diminish after the menopause. Less often it may begin at this time of life or even be accentuated.

Migraine can be diagnosed if the physician will keep in mind such characteristics as (1) periodicity and recurrence, (2) positive family history, (3) cortical phenomena, (4) gastrointestinal disturbance, (5) unilateral nature as well as shifting location of pain in the head, and (6) positive response to ergotamine products. Of course, if most or all of these characteristics are present, the migraine is typical, but more often it presents itself in an atypical form.

Typical migraine may be thought to have 3 vascular phases, namely, (1) vasoconstriction, (2) vasodilatation, and (3) edema.

A diagnosis of migraine may require the taking of a thorough and detailed history and a general examination including neurologic and special examinations of eye, ear, nose, and throat. Laboratory tests including roentgenograms of the head and cervical vertebrae as well as an electroencephalogram and pneumoencephalogram may be necessary to exclude organic causes of headache.

Of all the diagnostic aids, the history is most important but the provocative tests and careful inquiry into precipitating agents may prove useful.

When no headache is present, but migraine or some variant of migraine is suspected, a typical vasodilating headache may be induced with provocative agents, such as nitroglycerin, 1/50 grain (1.3 mg.) given sublingually, or histamine base, 0.35 mg. given subcutaneously. This is not to be confused with the immediate headache which will follow the use of nitrites or histamine. This immediate headache is a generalized throbbing of short duration. It comes on immediately after the use of histamine or nitroglycerin and is properly called either a "histamine" or a "nitrite"

headache. In contrast, the induced vasodilating attack which the patient calls a "typical" occurs usually about an hour after the provocative agent has been given and usually after the "histamine" or the "nitrite" headache has subsided.

Between the extremes of typical migraine and typical tension headaches, there are all degrees or combinations of migraine-tension headaches. Often migrainous patients will say, "I have two kinds of headache" and will describe the dull, constant, daily generalized headache of tension type and a more severe type which comes periodically, perhaps once or twice a week or month, which is throbbing, unilateral (although it can be bilateral), and associated with nausea, photophobia, and perhaps vomiting. This latter vasodilating headache is, in the author's opinion, an atypical migraine which is easily missed in diagnosis and treatment, having been obscured by the more prominent tension headache. Such individuals usually give a history of considerable anxiety, nervous tension, and fatigue which have been present for a considerable time. The migraine headache will respond to ergotamine products while the tension headache will not. The patient having a typical tension headache does not appear to be in great distress and is quite willing to discuss his headache problem freely. This attitude is in sharp contrast to that of the patient who is having an attack of migraine. He wants to be left alone and undisturbed.

Migraine is almost always associated with some degree of nervous tension. The tension state may be minimal or moderate to severe. When it is mild, drug therapy for migraine is usually enough to abort the attack. When moderate or severe, the migrainous attack becomes more resistant to drug therapy and at times nothing seems to be effective except those agents which induce sleep.

In differential diagnosis, brain tumor, subarachnoid hemorrhage, cerebral aneurysm, and various types of neuralgia must be excluded.

While one cannot expect to cure migraine, much relief can be afforded if the physician is willing to take the time to talk with the patient. Pessimism, impatience, and an unsympathetic attitude on the part of the physician will seldom lead to any improvement. Drug therapy, while helpful, is seldom the whole answer. The patient often needs to adopt a new philosophy of life, learn to relax and rest or seek diversion, and learn to recognize his prodromal symptoms early so that proper drugs can be taken promptly in order to abort his attacks. When the patient is forewarned and forearmed, anxiety for future headaches is reduced to a minimum and the headache is more amenable to drug therapy. (Proc. Staff Meet., Mayo Clin., Dec. 2, 1953, G. A. Peters, M. D., Section on Medicine, Mayo Clinic, Rochester, Minn.)

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### Effect of Levallorphan Tartrate Upon Respiratory Depression

N-allylnormorphine has been reported to be an effective antagonist to the respiratory depression induced by morphine, Demerol, dl Dromoran (racemic 3-hydroxy-N-methylmorphinan hydrobromide), methadone, codeine, dilaudid, and pantopon in animals and man. More recently another drug has been investigated in laboratory animals. This drug is 3-hydroxy-N-allylmorphinan and chemically bears a relationship to dl Dromoran similar to that of N-allylnormorphine to morphine. This new drug was found to be an effective antagonist to respiratory depression and analgesia induced by dl Dromoran hydrobromide, levo Dromoran tartrate (levo 3-hydroxy-N-methylmorphinan tartrate), codeine, and Nisentil hydrochloride. Salts of both the racemic form and the optical isomers of 3-hydroxy-N-allylmorphinan were investigated and it was determined that all the antagonistic activity was possessed by the levo rotatory isomer, the tartrate of which, designated as levallorphan tartrate, was used in this study.

The purpose of this study was to extend the investigation of the effects of levallorphan tartrate by observing the influence upon respiratory depression caused by overdose of opiates in man. Opiates have been used as a supplement to nitrous oxide anesthesia and have always produced as an undesirable effect, a significant degree of respiratory depression.

To investigate this problem, 19 patients scheduled to undergo surgical procedures that required minimal relaxation were studied. These were divided into 2 groups. The first group, consisting of 14 patients, was anesthetized with nitrous oxide-oxygen in nonhypoxic concentration supplemented by deliberate overdoses of 1 of 3 opiates--levo Dromoran tartrate, Demerol, or morphine. These 3 drugs were given intravenously in sufficient dosage to produce definite respiratory depression as well as to provide adequate supplement to the nitrous oxide. Anesthesia having been established and the operative procedure begun, the antagonist was administered intravenously, the effects upon respiration were noted, and an attempt was made to determine clinically any effect on the level of anesthesia. In the other group of 5 patients, the antagonist was given first, followed by the analgesic drugs given in appropriate doses and during a short enough interval of time to expect respiratory depression. Nitrous oxide-oxygen was then administered and effects upon respiration were noted and operations performed. In all cases the opiates used were administered during a time interval not exceeding 20 minutes. In some patients respiratory minute volume was measured by means of a ventigrator, and in others respiratory patterns were recorded with an electrically recording pneumotachograph. In all patients in whom it was thought that respiration was inadequate, support by manual intermittent positive pressure breathing was provided to minimize the effects of hypoventilation.

Although no quantitative measurements can be made, it appeared quite definitely that the combination of any one of these narcotics and levallorphan tartrate did provide a supplement to nitrous oxide anesthesia without the disadvantage of respiratory depression. In no patient was the abolition of respiratory depression accompanied by decrease in depth of narcosis. It was also noted on 2 occasions that in patients who had had respiratory depression abolished some 60 minutes previously, anesthesia would "become light" and the patient would move or otherwise respond to the surgical stimulus. When they were given additional doses of opiate, the anesthesia deepened and respiration was not affected. This fact suggests that there is some effect of the opiate drugs which is not antagonized by this drug and which acts in some manner to supplement nitrous oxide in maintaining anesthesia. Studies investigating this problem are now underway at this institution.

When given alone and prior to the analgesic drug, levallorphan tartrate appeared to be slightly sedative in its action. It did not stimulate respiration nor in any way act as a stimulant. In this small series no undesirable effects of the drug were noted. (Anesthesiology, Nov. 1953, W. K. Hamilton, M.D., and S.C. Cullen, M.D., State University of Iowa College of Medicine, Iowa City, Iowa)

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### Erythremic Myelosis

In 1923 and subsequently, Di Guglielmo demonstrated by clinical, hematologic, and pathologic data the existence of a primitive disorder of the erythropoietic system, similar to the acute leukemias, which he called "acute erythremic myelosis."

According to Di Guglielmo, the features of acute erythremic myelosis are: severe anemia from the onset of the disease; irregular fever, frequently remitting in type; splenomegaly, almost always marked; hepatomegaly, not so considerable as the splenic enlargement; an acute clinical course with a duration varying from a few weeks to 2 months; and a fatal termination. Other features include: the presence of numerous erythroblasts in the blood, most of them basophilic and very often atypical (paraerythroblasts); generalized proliferation of the erythropoietic tissue in all the hematopoietic and extrahematopoietic organs; and hemorrhagic manifestations of variable severity.

In the chronic form of the disease, the major differences, in contrast to the acute form, are the duration of the clinical course, which averages 2 years and the fact that the erythroblasts found in the blood are more mature. Most of them are orthochromatic but a few polychromatic and basophilic forms may be found. The clinical picture of erythremic myelosis may be



likened to that of the granulocytic leukemias, criteria for differentiation being based solely on the cytologic aspects of the blood and bone marrow.

Other basic characteristics of erythremic myelosis, acute and chronic, enumerated by Di Guglielmo are: hyperplasia of the erythropoietic tissue with such characteristics as primitiveness of a nonregenerative or reactive process; generalized invasiveness; nonreversibility persistent until death and unmodified by therapeutic means; and an embryonic type of maturation stemming directly from reticuloendothelial cells. In a limited sense, erythremic myelosis may be thought of as a disorder of the reticuloendothelial system.

The abnormal erythropoiesis is anaplastic. Maturation of the red cells is arrested and complete evolution to adult forms seldom occurs. This phenomenon is particularly noticeable in the acute type of the disease, because of the absence of the intermediate forms of the erythrocytes. Thus there may be a hiatus erythremicus, similar to the hiatus leukemicus of acute granulocytic leukemia. Finally, there is dysplasia of erythropoiesis leading to the presence of abnormalities in the cytoplasm and nuclei of the erythroblasts.

The case reported presented several interesting features and gave the authors the opportunity of making a differential diagnosis between acute hemolytic anemia, acute leukemia, and the Di Guglielmo syndrome.

Di Guglielmo's erythremic myelosis is rare. Most of the observed cases have been studied in Europe. This probably explains the common acceptance of erythremic myelosis in European countries and the skepticism which appears to be prevalent in North America regarding the disease.

In the differential diagnosis of the authors' case, hemolytic anemia and acute granulocytic leukemia were considered. The existence of abnormal hemolysis was quite evident, as indicated by the presence of jaundice with high amounts of indirect bilirubin in blood, normochromic anemia, reticulocytosis, diminished resistance of erythrocytes to hypotonic solutions, high daily output of fecal urobilinogen, and the erythroblastic bone marrow.

It was clear enough that this case was not one of hemolytic anemia or of acute leukemia. Instead the disorder was one of malignant red cell proliferation which constituted a clear example of one of the "myeloproliferative syndromes," in which erythremic myelosis can be included with chronic granulocytic leukemia, polycythemia vera, and megakaryocytic leukemia. (Blood, Dec. 1953, J. Báez-Villasenor, M. D., and L. Sánchez-Medal, M. D., Hospital de Enfermedades de la Nutrición, México, D. F. México)

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### DeQuervain's Disease

DeQuervain's disease is descriptively referred to as stenosing tendovaginitis and synovitis of the abductor pollicis longus and extensor pollicis brevis at the radial styloid process.

Individuals working in skilled trades and those which require manual dexterity are often so hampered by this condition that many hours of work are lost. The disability that accompanies this disease is so marked and the resulting discomfort so distressing, that the afflicted person dislikes using the involved thumb or hand for any reason whatsoever.

Splinting and physiotherapy are of doubtful value other than to afford temporary relief to a crippled hand. The fibrotic processes involving the tendons of the abductor pollicis longus and the extensor pollicis brevis may be progressive or stationary. In either case, the restricting bands never regress or resolve. Continued motion of the tendons through these constricting sheaths seems to provide for a greater proliferation of scar and fibrous tissue, and to reduce still further the diameter of the lumen through which these tendons must pass. Actually, division and excision of the involved pulleys is the only manner in which the tendons can be liberated from their encasement.

Unfortunately, most of the cases that ultimately come to operation have been treated for weeks or months with either physiotherapy, splinting, or plaster cast. The inutility of such therapy usually goes unrecognized for a long period of time, until either the patient demands a change in treatment or the condition is recognized in surgical consultation.

The disease occurs most frequently in manual workers, especially those who pinch with the thumb while moving the wrist. The act of pinching brings the abductor pollicis longus into action, as it is a strong stabilizer of the thumb. The onset of symptoms is usually gradual, but it may be acute following a blow or sudden strain of gripping or lifting. Lipscomb, quoting Diack and Patterson, points out that occupations and avocations which require repeated abduction of the thumb under stress of grasping motions, combined with abduction of the thumb and ulnar deviation of the wrist as in typewriting, knitting, fly casting, golfing, piano playing, and work on grinding and buffing machines, cause this condition.

The typical picture described by deQuervain consists of pain radiating from the radial styloid process, down the thumb, and up the forearm, slight swelling in the region of the tendon sheath, pain on movement of thumb and wrist, and inability to grasp objects firmly. The chief complaint is either pain in the wrist on using the thumb, or dropping articles because of pain or insecure grip. Strong active abduction of the thumb is painful.

DeQuervain's disease, although frequently unrecognized, is a crippling condition which is easily remedied by surgery.



The condition is far more prone to occur in women, and this pathologic condition should be considered in the differential diagnosis of persistent pain at the base of the thumb in the region of the radial styloid.

Surgery is the only treatment for this condition and should be carried out as soon as possible. (Ann. Surg., Dec. 1953, East Washington Square, Philadelphia 5, Pa., T.A. Lamphier, M.D., N.G. Long, M.D., and T. Dennehy, M.D.)

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#### Experimental Mouth Simulating In Vivo Conditions

An apparatus is described for the in vitro study of dental caries. Through mechanical means 6 oral conditions have been duplicated in this apparatus. These conditions are: (1) exchange of air, (2) pulpal circulation, (3) flow of saliva, (4) a constant oral temperature, (5) agitation of chamber, and (6) a system that may be closed from contamination. Tongue and cheek manipulations have not been reproduced, but means have been provided for the brushing of the teeth.

Future modifications are contemplated for the study of dental diseases in vitro. It is anticipated that this will include oral problems other than dental caries. (Research Report NM 008 013.00.01, 22 Sept 1953, Dental Research Facility, Dental Department, Great Lakes, Ill., B.A. Yocke, I. L. Shklair, Ph.D., LT W.L. White (DC) USN, and LT W.J. Carter (DC) USN)

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#### Training Course in Special Weapons, Isotopes, and Military Medicine for Reserve Medical and Dental Officers

The third annual course in Special Weapons, Isotopes, and Military Medicine will be presented by the District Medical and Dental Officers of the Twelfth Naval District under the sponsorship of the Inspector, Naval Medical Activities, Pacific Coast, during the period 1-5 March 1954, inclusive.

This course has been arranged to provide Reserve and Regular medical and dental officers of the Armed Forces the latest information to be employed in the many and varied aspects of Special Weapons, Isotopes, and Military Medicine and Dentistry. Each subject will be presented by a speaker of prominence in the specialty concerned.

Point credits will be awarded eligible Reserve officers on the basis of one (1) point for each day of attendance, provided sessions attended total

more than 2 hours. Each day of the course will be considered a session. Reserve medical and dental officers who are members of other branches of the Armed Forces desiring point credit for attendance must obtain authority and appropriate orders from the respective area Commander or Air Force Headquarters to assure accreditation. Point credits will not be awarded Reserve officers on active duty, retired officers, or other personnel not entitled to receive such credits.

This course is conducted primarily for the benefit of Reserve medical and dental officers of the Armed Forces on inactive duty; however, medical and dental officers on active duty may be given authorization orders, at no expense to the Government, in accordance with current instructions.

Naval Reserve Medical, Dental, Medical Service, Nurse, and Hospital Corps officers residing in the 11th, 12th, and 13th Naval Districts who desire to attend this course in a pay status should submit their requests for active duty for training to their Commandant's office at an early date. The deadline for submission of applications for this course by Reserve officers residing in the 12th Naval District is 2 February 1954.

Meals will be available on Treasure Island in Building #227. A very limited number of quarters are available at BOQ on Treasure Island and neighboring naval installations. There are ample hotel accommodations available in the San Francisco-Oakland area.

Transportation between Treasure Island and the Federal Office Building, San Francisco, will be available at 0800 and 1600 daily. This transportation will be in addition to commercial facilities.

Registration and orientation will be at 0800, 1 March 1954 in the John Basilone Theatre, Building 262, U.S. Naval Station, Treasure Island, San Francisco, Calif. (ResDiv, BuMed)

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#### Training Courses for Naval Reserve Medical and Dental Personnel

Scheduled active duty for training courses of 2 weeks' duration for Naval Reserve medical and dental personnel are as follows:

Medico-Military Training. --The third course in medico-military matters will be conducted 8-20 March 1954 at the U.S. Naval Medical School. The first week of this program will be devoted to the Medical Reserve Program of the Navy in general, presenting recent advances in military medicine and surgery, including aviation, submarine, and field medicine. The second week will be devoted to the problems likely to be confronted and recommended defensive techniques to be employed by medical and dental officers against bacterial, chemical, and radiological activity. The 1st, 3rd, 4th, 5th, 6th, 8th, 9th Naval Districts and the Potomac River Naval Command have been assigned quotas for Reserve



Medical, Medical Service, Dental, Nurse, and Hospital Corps officers who desire to attend. This is considered to be the outstanding and most attractive course available for Naval Reserve Medical Department officers on inactive duty, and these officers are urged to avail themselves of the training opportunities afforded by this course. Further information may be obtained from the Commanding Officer, U.S. Naval Medical School, NNMC, Bethesda 14, Md.

Field Medicine. --A course is scheduled to be conducted at Camp Pendleton, Oceanside, Calif., on 15 March 1954 for the benefit of Naval Reserve male medical personnel residing in the 11th, 12th, and 13th Naval Districts. Lectures, demonstrations, and practical exercises will be presented to familiarize Reserve medical personnel with the aspects of field medicine.

These courses have been designed to provide active duty for training, information, and recommended techniques to be employed in specialized fields closely related to naval medicine which are not readily available to such personnel in their civilian pursuits, but invaluable to their respective function in the event of mobilization. Eligible personnel who desire to attend these courses in a pay status should submit their request to the Commandant of their home naval district at the earliest practicable date. Attention is invited to the fact that attendance at these courses will not, in any way, increase the Reservist's vulnerability for orders to extended active duty. (ResDiv, BuMed)

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#### From the Note Book

1. Rear Admiral Lamont Pugh, Surgeon General of the Navy, left Washington on 5 Jan 1954 for a visit to the naval medical facilities in the Northwestern part of the United States, including Tongue Point, Ore., and Whidbey Island, Wash.; the Navy's bases at Kodiak and Adak in the Aleutians; the Medical Department's facilities and personnel in Japan and Korea and certain islands in the Pacific, including the Marianas Islands, Kwajalein, Midway, and Honolulu. Admiral Pugh is scheduled to return to Washington, D.C. via San Francisco on or about 26 Jan 1954. (TIO, BuMed)

2. Dental officers of 8 nations participated in the First All-Korea Interservice Dental Professional Meeting which was held in the Chosun Hotel, Chosan, Korea, 28-29 Nov 1954. Five United States naval dental officers presented table clinics as follows: CDR G. E. Madden (DC) USN, Oral Anatomy as Related to Full Denture Construction; LCDR K. A. N. Traeger (DC) USN and LT W. R. Staples (DC) USN, Extra-Oral Cranial Fixation Appliances; LTJG C. L. Wilkinson (DC) USNR, Interesting Oral Surgery Cases; and LTJG J. A. Moore (DC) USNR, Replantation of Anterior Teeth. (TIO, BuMed)

3. Two graduation exercises were held at the Naval Dental School, NNMC, Bethesda, Md., on 18 Dec 1953. In one ceremony, 30 dental officers were graduated from the general and specialized postgraduate courses. Rear Admiral Lamont Pugh, Surgeon General of the Navy, gave the graduation address and Rear Admiral Daniel W. Ryan (DC) USN, Chief of the Dental Division, Bureau of Medicine and Surgery, presented the diplomas. In the second ceremony, 35 dental technicians were graduated from the new Advanced General, Prosthetic, and Repair Technicians Schools, and from the Basic Repair School. Captain B. H. Faubion (DC) USN, Head of the Professional Branch of the Dental Division, Bureau of Medicine and Surgery, gave the graduation address, and Captain R. W. Taylor (DC) USN, Commanding Officer of the Naval Dental School, presented the graduation certificates. (TIO, BuMed)
4. Construction contracts for 155 projects to aid in the Nation's stream pollution abatement efforts, through providing treatment of sewage from municipalities, institutions, and other significant population centers, were awarded during the third quarter of 1953. The contracts totaled \$38 million and covered 87 new plants and 68 additions, enlargements, or improvements to existing plants. (Dept. H. E. W., P. H. S.)
5. During the first 49 weeks of the current year, a total of 2,206 cases of typhoid fever was reported in the United States as compared with 2,331 cases for the corresponding period of last year. Although cases were scattered throughout the country, more than a hundred have been reported in 6 States. They are as follows: Texas, 272; Pennsylvania, 127; Arkansas, 118; Kentucky, 106; Ohio, 102; and New York, 101. (Dept. H. E. W., P. H. S.)
6. The following naval medical officers have recently been certified in their specialties by American boards: CAPT C. D. Riggs (MC) USN, American Board of Otolaryngology; CDR G. T. Anderson (MC) USN, American Board of Dermatology and Syphilology; CAPT O. W. Chenault (MC) USN, as a member of the Founders Group in Aviation Medicine of the American Board of Preventive Medicine; and LT S. B. Alexander (MC) USNR, selected to Associateship in the American College of Physicians.
7. An attempt is made to show that the data available are not altogether adequate for establishing exact criteria for the normal electrocardiogram. (Circulation, Dec. 1953, C. E. Kossman, M. D., New York University, College of Medicine, New York, N. Y.)



8. Transthoracic dorsolumbar sympathectomy permitting maximum exposure of the sympathetic nervous system, and an easy approach to the adrenals is described in Postgraduate Medicine, Dec. 1953, by W.P. Kleitsch, Veterans Administration Hospital, Omaha, Nebr.
9. The treatment of internal carotid artery aneurysms by proximal arterial ligation is discussed in the Journal of Neurosurgery, Nov. 1953, by S. P. W. Black, M.D. and W. J. German, M.D., Yale University School of Medicine, New Haven, Conn.
- 10.. Data presented indicate the existence of a systemic disease in which there is involvement of the thoracic, abdominal, perivisceral, and intra-visceral adipose tissue. It is suggested that the term systemic panniculitis be used. (Am. J. Path., Nov.-Dec. 1953, B. Steinberg, M.D., Toledo, Ohio) (See Medical News Letter, Vol. 17, No. 11, p. 11)
11. A collective review of current concepts and surgical technics in cardiovascular surgery appears in Surgery, Gynecology and Obstetrics, Dec. 1953, R. A. Nabatoff, M.D., New York, N. Y.
12. Factors involved in pediatric preanesthetic preparation consist of a modified psychological preparation, a technic of preanesthetic hypnosis produced by a small dose of thiopental sodium administered rectally, procaine amide to diminish reflex hyperactivity, and the use of banthine as a drying agent. (Anesthesiology, Nov. 1953, C. H. Burstein, M.D., Hospital for Special Surgery, New York, N. Y.)
13. The importance of primary torsion of the omentum in the differential diagnosis of acute conditions of the abdomen is discussed in the American Journal of Surgery, Dec. 1953, by W. L. Martin, M.D., F. Tropea, Jr., M.D., and T. Zaydon, M.D., Hahnemann Hospital, Philadelphia, Pa.
14. The author emphasizes the insidious and silent invasion that characterizes a few diseases of the gastrointestinal tract, a region in which early recognition is vital if they are to be arrested or eliminated. (J. Internat. Coll. Surgeons, Nov. 1953, C. S. White, Washington, D. C.)

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BUMED INSTRUCTION 1520.2A

17 Dec 1953

From: Chief, Bureau of Medicine and Surgery  
To: All Ships and Stations Having Dental Corps Personnel Regularly Assigned

Subj: Graduate and postgraduate training for officers of the Dental Corps,  
U.S. Navy

Ref: (a) Article 6-82, ManMedDept

This instruction informs all officers of the Dental Corps, U.S. Navy, concerning graduate and postgraduate training. BuMed Inst. 1520.2 is cancelled.

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Permit No. 1048

OFFICIAL BUSINESS

WASHINGTON 25, D.C.

DEPARTMENT OF THE NAVY  
BUREAU OF MEDICINE AND SURGERY

PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300